Message

From: Berry, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=88C4AEFC381A467590DC0CB8D8625150-BERRY, DAVID]
Sent: 2/13/2019 5:51:36 PM
To: Baldwin, Julia [jbaldwin@mso.umt.edu]
Subject: RE: UMontana fact sheet
Attachments: Reid_Wittenoom_JAIM_ 2013.pdf; Pairon et al_Asbestos pp and Lung Cancer _ATJj_2014.pdf; Benson et al _RegToxicolPharm_80_270-271_2016.pdf

Hi Julia
Attached is a paper from Alison Reid that deals with follow up on childhood patients exposed to crocidolite in the town of Wittenoom in Western Australia. I've also sent a paper by Parion who is investigating disease states in the French worker cohort [primarily steam and pipe fitters].
Also attached one of our papers on the toxicity of Libby Amphibole mix as a fyi
david
David L. Berry, Ph.D.
Senior Toxicologist
U.S. EPA Region 8, EPR-S
1595 Wynkoop Street
Denver, CO 80202-1129
(303) -312-6358
(303) -312-7203 FAX

-----Original Message-----
From: Baldwin, Julia <jbaldwin@mso.umt.edu>
Sent: Wednesday, February 13, 2019 10:10 AM
To: Wroble, Julie <Wroble.Julie@epa.gov>
Cc: Berry, David <Berry.David@epa.gov>
Subject: Re: UMontana fact sheet

As far as I know they only did NIOSH 7402 - at least that is all I have seen. I haven' t seen any PCM data besides the old historical data for the building. Page 12 of the document I sent has the only ABS sample with a fiber and that' s the one I refer to in the fact sheet.

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778

On Feb 13, 2019, at 10:02 AM, Wroble, Julie <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov>> wrote:

Thanks for the reminder, I hadn't looked at these data in a while. The more recently collected data including the ABS data were done with PCM and 7402, correct? I'm looking through the latest fact sheet now. I have yet to hear from my boss whether we can be acknowledged or not.

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu>>
Sent: Wednesday, February 13, 2019 8:56:19 AM
To: Wroble, Julie
Cc: Berry, David
Subject: Re: UMontana fact sheet

This is the one I was referring to. Scroll to pages 19-23. My understanding is that the PCMe method is " PCM equivalent" meaning that they use the TEM to analyze instead of a microscope. From what I understand it allows for better resolution of small fibers and the ability to confirm by EDS what the fibers are and whether they are asbestos. Are these the same analyses you are referring to?

Is there other actual PCM data I am missing? I haven' t seen that in what' s been posted (or maybe I am missing where it is)

Julie

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On Feb 13, 2019, at 9:42 AM, Wroble, Julie
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>> wrote:

I don't know that I have seen ISO 10312 data for any of the samples. What I have seen is NIOSH 7402 where samples analyzed by PCM are looked at again by TEM and mineralogy is verified. Chris and Scott may have more experience with this, but I don't think you can disregard the PCM results as that is part of the analysis.

_____
From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 9:52:32 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

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I think I found the correct Libby reference on the CT scans, although the pdf I found was a pdf on a UMontana site on the topic. Not sure if there is a more official place that that resides.

Let me know if you can get approval for the acknowledgments. Curtis was ok with being on there, so I added him. I think this is a much improved document so I' d like to get it out there as soon as I can.

Julie

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"Berry, David" <Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

I find Curtis' edits to be helpful. I have a few additional questions. I'm still waiting for guidance on whether our names can be on there or not...

I am also a bit concerned about how the PCM data are being discounted based on what was found in the 7402 analysis. The PCM results had detectable fibers. the 7402 analysis indicated that these were not asbestos, but OSHA doesn't let you use TEM analysis for compliance. This is not the type of data I normally work with and have shared this concern with Scott and Chris as well.

_____
From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 2:28:10 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

Hi guys,

Curtis provided some additional suggestions that are incorporated into this version.

Julie

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I'll call you at 930 and we can loop David in.

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Hi Julie,

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David and I have a few additional comments that we can discuss if you want later this morning. I am also going to talk with Scott Rogers about sampling recommendations shortly. I can talk at 930 my time if that works for all of you. I have a meeting at 11 am my time but should be free after that.

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Sent: Tuesday, February 12, 2019 12:00:46 AM
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Hi Julie,

Attached is a revised version taking into account your concerns. I would very much value your input, particularly if you have any further clarification on the unit risk weighting that I should add.

Please let me know if you have additional concerns We're trying our best to provide some clarification on the data we are dealing with.

I also thought about adding a statement on settled dust - another issue we need help with communicating is regarding the 5000 f/cm2 clean-up limit that UM has set. It keeps getting reported that this is "federally mandated". The information I have gathered on it is this:

Currently, there is no federal regulatory limit for asbestos in settled dust.
Guidelines are from Millette & Hays. 1994. Settled Asbestos Dust Sampling and Analysis.
Recommendations are based on an "experience standard"
Clean (below detection limit): below 1,000 f/cm2
Background: 10,000 f/cm2
High: 100,000 f/cm2
Our dust wipe samples have a detection limit of 920-4800<tel:920-4800> f/cm2 The University has set a clean-up limit of 5,000 f/cm2. That same limit was set for WTC dust and in Libby for clean-up.

Is all of that correct information? Anything else you would add to that?

Thanks so much for taking the time to explain some things to me. I very much appreciate your feedback.

Julie

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On 2/11/19, 4:07 PM, "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>> wrote:

Julia:
I'd be happy to get on the phone with you if you like. David Berry is the Region 8 Toxicologist who worked quite a bit on the Libby site. We are both members of EPA's technical review workgroup on asbestos and have worked on guidance relating to sampling and analysis of asbestos at Superfund sites. Here's a link the the latest version which is currently being updated.
https://semspub.epa.gov/work/HQ/175329.pdf
FRAMEWORK FOR INVESTIGATING ASBESTOS-CONTAMINATED SUPERFUND SITES - OSWER 9200.0-68 - US Environmental Protection Agency<https://semspub.epa.gov/work/HQ/175329.pdf>
semspub.epa.gov<http://semspub.epa.gov/><http://semspub.epa.gov/>
emphasized in this recommended framework. ABS can be useful for assessment of asbestos contamination of both outdoor soil and indoor dust. To allow for improved risk assessments, the analytical procedure used to analyze samples from a

Note that appendix E of this document shows how toxicity values are increased for people exposed earlier in life. This is an important consideration when communicating health risks, especially when children are possibly exposed.

Here's a link to our main asbestos page: https://www.epa.gov/asbestos

The best reference I am aware of for asbestos in settled dust is a book by Millette and Hayes.
https://www.crcpress.com/Settled-Asbestos-Dust-Sampling-and-Analysis/Hays-Millette/p/book/9780873719483
They describe an "experience standard" that is used by many in industry. Note that this reference is fairly dated. For Libby and WTC we went with half their lower value in the interest of protection of public health in residential settings. However, we have collected a lot of data, especially at Libby with indoor dust and indoor air measurements and were unable to discover relationships between the two. In the case of asbestos, there are many factors which impact release of fibers to the air including relative

humidity, level of disturbance/activity, type of soil, type of asbestos, etc. These issues have posed challenging questions and are the focus of much current EPA research on asbestos.

Because the exposure of interest for risk is the inhalation pathway, EPA relies on measurements of asbestos in air, rather than dust, soil, or bulk material to the extent practical. That being said, we often go straight to cleanup if soil levels are above certain benchmarks and we know exposures are occurring.

The one fiber question is a challenging one and I can tell you I have had to answer it at more than one public meeting. Our response is usually focused on the fact that for any carcinogen, you will want to reduce your exposure to the greatest extent practical. As you may be aware, the OSHA PEL for asbestos is considered to be a significant risk standard and meaning there is a risk of death for 3.4 out of every 1000 workers exposed at that level. This value should never be used for the general public and certainly not for children. The text on OSHA's site states that there is no safe level of exposure to any kind of asbestos. https://www.osha.gov/SLTC/asbestos/

I would be happy to talk with you further if you have any follow up questions.
Julie

Julie Wroble|Toxicologist|USEPA Region 10|1200 6th Ave., OERA-140|Seattle, WA 98101|T: 206-553-1079<tel:206-553-1079>|e-mail: wroble.julie@epa.gov<mailto:wroble.julie@epa.gov><mailto:wroble.julie@epa.gov>

-----Original Message-----
From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Monday, February 11, 2019 2:35 PM
To: Wroble, Julie <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>>
Cc: Short, Paula <paula.short@mso.umt.edu<mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu>>
Subject: UMontana fact sheet

Hi Julie,

Paula forwarded me your concerns with the document that I put together for the website. I am a geologist who knows quite a bit about the mineralogy and geology of the asbestos minerals, as well as mineralogy-based studies of biodurability, and was asked to put this together by our communications team because questions were being asked that they couldn't answer. I definitely don't want any factually incorrect information in the document so I welcome your critique and will be revising the document to reflect your input. However, I also want to try to communicate the most recent science-based results to help folks gain a perspective on the risk. In hindsight, my attempt to relate surface load numbers to airborne concentrations was sketchy, but we have been getting so many questions about that more than anything else. It has been the main point of concern and one that nobody has been able to answer for us. Any guidance or references you can provide specifically on how to interpret the concentration in dust wipe samples that can help in communicating that aspect to the public would be very helpful.

I've requested the diffraction and EDS data on the two amosite fibers to confirm the composition of those fibers and can certainly add that information once I look at it.

The how harmful is one fiber is there because it is a question that has actually been asked. My point was to get across the idea that asbestos is present at background levels and we are exposed to it daily. There seems to be a general public perception that we only breathe asbestos fibers when we are exposed to it as a contaminant and I was trying to put that into perspective. Perhaps it would be best to discuss it in different terms, but I was trying to come up with an analogy that people could relate to and f-yr/mL is a tough concept to explain to the general public.

I'd be happy to chat about it over the phone if that is easier.

Sincerely,
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Message

From: Baldwin, Julia [jbaldwin@mso.umt.edu]
Sent: 2/12/2019 7:37:28 PM
To: Wroble, Julie [Wroble.Julie@epa.gov]; Berry, David [Berry.David@epa.gov]
Subject: Re: UMontana fact sheet
Attachments: Asbestos Fact Sheet McGill v3.docx

Hi Julie,

Thanks again for talking to me this morning. Here is the revised document. Let me know if you have further comments.

Julie

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Sent: Tuesday, February 12, 2019 2:28:10 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

Hi guys,

Curtis provided some additional suggestions that are incorporated into this version.

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778

From: "Wroble, Julie" <Wroble.Julie@epa.gov>
Date: Tuesday, February 12, 2019 at 10:27 AM
To: "Baldwin, Julia" <jbaldwin@mso.umt.edu>, "Berry, David" <Berry.David@epa.gov>
Subject: Re: UMontana fact sheet

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From: Baldwin, Julia <jbaldwin@mso.umt.edu>
Sent: Tuesday, February 12, 2019 9:21:17 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

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Julia:
I'd be happy to get on the phone with you if you like. David Berry is the Region 8 Toxicologist who worked quite a bit on the Libby site. We are both members of EPA's technical review workgroup on asbestos and have worked on guidance relating to sampling and analysis of asbestos at Superfund sites. Here's a link the the latest version which is currently being updated.
https://semspub.epa.gov/work/HQ/175329.pdf

FRAMEWORK FOR INVESTIGATING ASBESTOS-CONTAMINATED SUPERFUND SITES - OSWER 9200.0-68 - US Environmental Protection Agency

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emphasized in this recommended framework. ABS can be useful for assessment of asbestos contamination of both outdoor soil and indoor dust. To allow for improved risk assessments, the analytical procedure used to analyze samples from a

Note that appendix E of this document shows how toxicity values are increased for people exposed earlier in life. This is an important consideration when communicating health risks, especially when children are possibly exposed.

Here's a link to our main asbestos page: https://www.epa.gov/asbestos

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Julie Wroble|Toxicologist|USEPA Region 10|1200 6th Ave., OERA-140|Seattle, WA 98101|T: 206-553-1079|e-mail: wroble.julie@epa.gov

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Subject: UMontana fact sheet

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From: Wroble, Julie [Wroble.Julie@epa.gov]
Sent: 2/13/2019 5:02:26 PM
To: Baldwin, Julia [jbaldwin@mso.umt.edu]
CC: Berry, David [Berry.David@epa.gov]
Subject: Re: UMontana fact sheet

Thanks for the reminder, I hadn't looked at these data in a while. The more recently collected data including the ABS data were done with PCM and 7402, correct? I'm looking through the latest fact sheet now. I have yet to hear from my boss whether we can be acknowledged or not.

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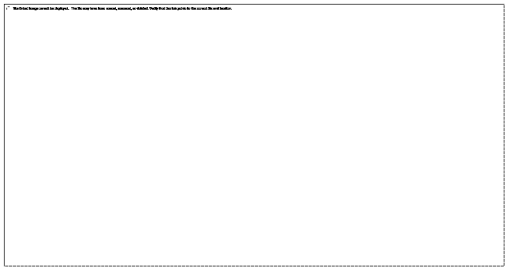
Two citations for libby exposure related to observed lung effects.

https://erj.ersjournals.com/content/38/2/376

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/



Libby vermiculite exposure and risk of developing asbestos-related lung and pleural diseases - PubMed Central (PMC)

www.ncbi.nlm.nih.gov

The vermiculite ore formerly mined in Libby, Montana, contains asbestiform amphibole fibers of winchite, richterite, and tremolite asbestos. Because of the public health impact of widespread occupational and nonoccupational exposure to amphiboles in Libby vermiculite, numerous related studies have ...

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I am also a bit concerned about how the PCM data are being discounted based on what was found in the 7402 analysis. The PCM results had detectable fibers. the 7402 analysis indicated that these were not asbestos, but OSHA doesn't let you use TEM analysis for compliance. This is not the type of data I normally work with and have shared this concern with Scott and Chris as well.

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 2:28:10 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

Hi guys,

Curtis provided some additional suggestions that are incorporated into this version.

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

From: "Wroble, Julie" <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov>>
Date: Tuesday, February 12, 2019 at 10:27 AM
To: "Baldwin, Julia" <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu>>, "Berry, David" <Berry.David@epa.gov<mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

I'll call you at 930 and we can loop David in.

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Sent: Tuesday, February 12, 2019 9:21:17 AM

To: Wroble, Julie
Cc: Short, Paula; Berry, David
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Hi Julie,

Sounds good. I haven't heard back from Paula yet so it may just be me. You can reach me at Ex. 6 Personal Privacy (PP)

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9:30 your time works for me. Paula, did you want to be in on this call? If so, how/where should we do it?

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Subject: Re: UMontana fact sheet

David and I have a few additional comments that we can discuss if you want later this morning. I am also going to talk with Scott Rogers about sampling recommendations shortly. I can talk at 930 my time if that works for all of you. I have a meeting at 11 am my time but should be free after that.

Julie

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu>>

Sent: Tuesday, February 12, 2019 12:00:46 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

Attached is a revised version taking into account your concerns. I would very much value your input, particularly if you have any further clarification on the unit risk weighting that I should add.

Please let me know if you have additional concerns We're trying our best to provide some clarification on the data we are dealing with.

I also thought about adding a statement on settled dust - another issue we need help with communicating is regarding the 5000 f/cm2 clean-up limit that UM has set. It keeps getting reported that this is "federally mandated". The information I have gathered on it is this:

Currently, there is no federal regulatory limit for asbestos in settled dust.
Guidelines are from Millette & Hays. 1994. Settled Asbestos Dust Sampling and Analysis.
Recommendations are based on an "experience standard"
    Clean (below detection limit): below 1,000 f/cm2
    Background: 10,000 f/cm2
    High: 100,000 f/cm2
Our dust wipe samples have a detection limit of 920-4800<tel:920-4800> f/cm2
The University has set a clean-up limit of 5,000 f/cm2. That same limit was set for WTC dust and in Libby for clean-up.

Is all of that correct information? Anything else you would add to that?

Thanks so much for taking the time to explain some things to me. I very much appreciate your feedback.

Julie

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On 2/11/19, 4:07 PM, "Wroble, Julie" <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov>> wrote:

Julia:
I'd be happy to get on the phone with you if you like. David Berry is the Region 8 Toxicologist who worked quite a bit on the Libby site. We are both members of EPA's technical review workgroup on asbestos and have worked on guidance relating to sampling and analysis of asbestos at Superfund sites. Here's a link the the latest version which is currently being updated.
https://semspub.epa.gov/work/HQ/175329.pdf
FRAMEWORK FOR INVESTIGATING ASBESTOS-CONTAMINATED SUPERFUND SITES - OSWER 9200.0-68 - US Environmental Protection Agency<https://semspub.epa.gov/work/HQ/175329.pdf>

semspub.epa.gov<http://semspub.epa.gov/>
emphasized in this recommended framework. ABS can be useful for assessment of asbestos contamination of both outdoor soil and indoor dust. To allow for improved risk assessments, the analytical procedure used to analyze samples from a

Note that appendix E of this document shows how toxicity values are increased for people exposed earlier in life. This is an important consideration when communicating health risks, especially when children are possibly exposed.

Here's a link to our main asbestos page: https://www.epa.gov/asbestos

The best reference I am aware of for asbestos in settled dust is a book by Millette and Hayes. https://www.crcpress.com/Settled-Asbestos-Dust-Sampling-and-Analysis/Hays-Millette/p/book/9780873719483 They describe an "experience standard" that is used by many in industry. Note that this reference is fairly dated. For Libby and WTC we went with half their lower value in the interest of protection of public health in residential settings. However, we have collected a lot of data, especially at Libby with indoor dust and indoor air measurements and were unable to discover relationships between the two. In the case of asbestos, there are many factors which impact release of fibers to the air including relative humidity, level of disturbance/activity, type of soil, type of asbestos, etc. These issues have posed challenging questions and are the focus of much current EPA research on asbestos.

Because the exposure of interest for risk is the inhalation pathway, EPA relies on measurements of asbestos in air, rather than dust, soil, or bulk material to the extent practical. That being said, we often go straight to cleanup if soil levels are above certain benchmarks and we know exposures are occurring.

The one fiber question is a challenging one and I can tell you I have had to answer it at more than one public meeting. Our response is usually focused on the fact that for any carcinogen, you will want to reduce your exposure to the greatest extent practical. As you may be aware, the OSHA PEL for asbestos is considered to be a significant risk standard and meaning there is a risk of death for 3.4 out of every 1000 workers exposed at that level. This value should never be used for the general public and certainly not for children. The text on OSHA's site states that there is no safe level of exposure to any kind of asbestos. https://www.osha.gov/SLTC/asbestos/

I would be happy to talk with you further if you have any follow up questions.
Julie

Julie Wroble|Toxicologist|USEPA Region 10|1200 6th Ave., OERA-140|Seattle, WA 98101|T: 206-553-1079<tel:206-553-1079>|e-mail: wroble.julie@epa.gov<mailto:wroble.julie@epa.gov>

-----Original Message-----
From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu>>
Sent: Monday, February 11, 2019 2:35 PM
To: Wroble, Julie <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov>>
Cc: Short, Paula <paula.short@mso.umt.edu<mailto:paula.short@mso.umt.edu>>
Subject: UMontana fact sheet

Hi Julie,

Paula forwarded me your concerns with the document that I put together for the website. I am a geologist who knows quite a bit about the mineralogy and geology of the asbestos minerals, as well as mineralogy-based studies of biodurability, and was asked to put this together by our communications team because questions were being asked that they couldn't answer. I definitely don't want any factually incorrect information in the document so I welcome your critique and will be revising the document to reflect your input. However, I also want to try to communicate the most recent science-based results to help folks gain a perspective on the risk. In hindsight, my attempt to relate surface load

numbers to airborne concentrations was sketchy, but we have been getting so many questions about that more than anything else. It has been the main point of concern and one that nobody has been able to answer for us. Any guidance or references you can provide specifically on how to interpret the concentration in dust wipe samples that can help in communicating that aspect to the public would be very helpful.

I've requested the diffraction and EDS data on the two amosite fibers to confirm the composition of those fibers and can certainly add that information once I look at it.

The how harmful is one fiber is there because it is a question that has actually been asked. My point was to get across the idea that asbestos is present at background levels and we are exposed to it daily. There seems to be a general public perception that we only breathe asbestos fibers when we are exposed to it as a contaminant and I was trying to put that into perspective. Perhaps it would be best to discuss it in different terms, but I was trying to come up with an analogy that people could relate to and f-yr/mL is a tough concept to explain to the general public.

I'd be happy to chat about it over the phone if that is easier.

Sincerely,
Julie Baldwin

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

Message

From: Wroble, Julie [Wroble.Julie@epa.gov]
Sent: 2/13/2019 5:46:20 PM
To: Baldwin, Julia [jbaldwin@mso.umt.edu]
CC: Berry, David [Berry.David@epa.gov]
Subject: Re: UMontana fact sheet

I'll let David weigh in. In general, because EPA treats all forms of asbestos the same, we don't think it makes sense to have so much discussion about why chrysotile might not be as bad. David has examples of epidemiology cohorts, where chrysotile has caused the deaths of many people.

From: Baldwin, Julia <jbaldwin@mso.umt.edu>
Sent: Wednesday, February 13, 2019 9:41:56 AM
To: Wroble, Julie
Cc: Berry, David
Subject: Re: UMontana fact sheet

Thanks. I can certainly soften the statement by taking out the bold-faced and just leaving in the scientific evidence. Something like "It has been /proposed that…" and present the data without saying there is "scientific consensus" on the interpretation. Would that be ok, or is just presenting that line of evidence a problem for EPA?

I have to run and teach now and then am in meetings for awhile too, so I'll get back to this this afternoon.

Thanks for the references.

Julie

Julia A. Baldwin
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On Feb 13, 2019, at 10:22 AM, Wroble, Julie <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov>> wrote:

I'm mostly fine with the final version of the fact sheet except I don't think EPA can support the statement that there is scientific consensus that chrysotile fibers are more readily cleared from the body. EPA, OSHA and other regulatory agencies maintain that all forms of asbestos cause cancer and are are treated equivalently.
I will be in meetings much of today and will not be available.

Two citations for libby exposure related to observed lung effects.<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>https://erj.ersjournals.com/content/38/2/376

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/
[https://www.ncbi.nlm.nih.gov/corehtml/pmc/pmcgifs/pmc-logo-

share.png]<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>

Libby vermiculite exposure and risk of developing asbestos-related lung and pleural diseases - PubMed Central (PMC)<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>
www.ncbi.nlm.nih.gov<http://www.ncbi.nlm.nih.gov/>
The vermiculite ore formerly mined in Libby, Montana, contains asbestiform amphibole fibers of winchite, richterite, and tremolite asbestos. Because of the public health impact of widespread occupational and nonoccupational exposure to amphiboles in Libby vermiculite, numerous related studies have ...

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu>>
Sent: Wednesday, February 13, 2019 8:56:19 AM
To: Wroble, Julie
Cc: Berry, David
Subject: Re: UMontana fact sheet

This is the one I was referring to. Scroll to pages 19-23. My understanding is that the PCMe method is "PCM equivalent" meaning that they use the TEM to analyze instead of a microscope. From what I understand it allows for better resolution of small fibers and the ability to confirm by EDS what the fibers are and whether they are asbestos. Are these the same analyses you are referring to?

Is there other actual PCM data I am missing? I haven't seen that in what's been posted (or maybe I am missing where it is)

Julie

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On Feb 13, 2019, at 9:42 AM, Wroble, Julie
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>> wrote:

I don't know that I have seen ISO 10312 data for any of the samples. What I have seen is NIOSH 7402 where samples analyzed by PCM are looked at again by TEM and mineralogy is verified. Chris and Scott may have more experience with this, but I don't think you can disregard the PCM results as that is part of the analysis.

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 9:52:32 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

Are you talking about the PCMe air samples that were measured with the ISO method (the ASUM childcare Jan.21 report)? I thought that since PCMe uses the TEM that they did EDS on the fibers in order to rule out asbestos

compositions – correct me if I am wrong on that though. Also, I was able to get the diffraction and EDS data on the two amosite fibers from the wipe samples and looked those over and they were identified correctly.

I think I found the correct Libby reference on the CT scans, although the pdf I found was a pdf on a UMontana site on the topic. Not sure if there is a more official place that that resides.

Let me know if you can get approval for the acknowledgments. Curtis was ok with being on there, so I added him. I think this is a much improved document so I'd like to get it out there as soon as I can.

Julie

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Date: Tuesday, February 12, 2019 at 6:26 PM
To: "Baldwin, Julia" <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>, "Berry, David" <Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>>
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Julia:
I'd be happy to get on the phone with you if you like. David Berry is the Region 8 Toxicologist who worked quite a bit on the Libby site. We are both members of EPA's technical review workgroup on asbestos and have worked on guidance relating to sampling and analysis of asbestos at Superfund sites. Here's a link the the latest version which is currently being updated.
https://semspub.epa.gov/work/HQ/175329.pdf
FRAMEWORK FOR INVESTIGATING ASBESTOS-CONTAMINATED SUPERFUND SITES - OSWER 9200.0-68 - US Environmental Protection Agency<https://semspub.epa.gov/work/HQ/175329.pdf>
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Here's a link to our main asbestos page: https://www.epa.gov/asbestos

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Julie Wroble|Toxicologist|USEPA Region 10|1200 6th Ave., OERA-140|Seattle, WA 98101|T: 206-553-1079<tel:206-553-1079>|e-mail: wroble.julie@epa.gov<mailto:wroble.julie@epa.gov><mailto:wroble.julie@epa.gov>

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The how harmful is one fiber is there because it is a question that has actually been asked. My point was to get across the idea that asbestos is present at background levels and we are exposed to it daily. There seems to be a general public perception that we only breathe asbestos fibers when we are exposed to it as a contaminant and I was trying to put that into perspective. Perhaps it would be best to discuss it in different terms, but I was trying to come up with an analogy that people could relate to and f-yr/mL is a tough concept to explain to the general public.

I'd be happy to chat about it over the phone if that is easier.

Sincerely,
Julie Baldwin

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

Message

From: Wroble, Julie [Wroble.Julie@epa.gov]
Sent: 2/13/2019 8:18:46 PM
To: Baldwin, Julia [jbaldwin@mso.umt.edu]; Berry, David [Berry.David@epa.gov]
Subject: Re: UMontana fact sheet

The berman and crump approach was never formally adopted by EPA and was never validated. Unfortunately, it has been used on sites where Dr. Berman acted as a consultant. EPA does not support this approach.

From: Baldwin, Julia <jbaldwin@mso.umt.edu>
Sent: Wednesday, February 13, 2019 12:13:15 PM
To: Berry, David
Cc: Wroble, Julie
Subject: Re: UMontana fact sheet

Thanks David,

I think that all sounds reasonable. I'll work on revising that language.

What is your opinion on the Berman and Crump work on calculating individual IURs for chrysotile vs amphibole? I'm just curious if that's solid work or not (not that I want to go there, it's just something I am curious about).

Julie

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Hi Julia
I sent a couple of papers your way - one on Wittenoom and one on the French steam fitters [mostly exposure to chrysotile] where the n > 5,000 in the cohort. Point being that chrysotile is responsible for lots of mortality and morbidity.
I would like the bold statement about chrysotile clearance unbolded and folks might get the impression that it is less toxic. The other thing to remember is that the long fiber residence time of the fibers in various compartments in the lung, the fibers continue to elicit adverse biological responses such as inflammation and hyperplasia and immune responses.
The paragraph on the page containing "Will a single . . . '. Need to spell out what a CT scan is - Computing tomography [usually it is HRCT scan - high resolution computing tomography]
I'm around most of today if you have further questions
David

David L. Berry, Ph.D.
Senior Toxicologist
U.S. EPA Region 8, EPR-S
1595 Wynkoop Street
Denver, CO 80202-1129

(303) -312-6358<tel:(303)%20-312-6358>
(303) -312-7203<tel:(303)%20-312-7203> FAX

-----Original Message-----
From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu>>
Sent: Wednesday, February 13, 2019 10:42 AM
To: Wroble, Julie <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov>>
Cc: Berry, David <Berry.David@epa.gov<mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

Thanks. I can certainly soften the statement by taking out the bold-faced and just leaving in the scientific evidence. Something like "It has been /proposed that…" and present the data without saying there is "scientific consensus" on the interpretation. Would that be ok, or is just presenting that line of evidence a problem for EPA?

I have to run and teach now and then am in meetings for awhile too, so I'll get back to this this afternoon.

Thanks for the references.

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I'm mostly fine with the final version of the fact sheet except I don't think EPA can support the statement that there is scientific consensus that chrysotile fibers are more readily cleared from the body. EPA, OSHA and other regulatory agencies maintain that all forms of asbestos cause cancer and are are treated equivalently.
I will be in meetings much of today and will not be available.

Two citations for libby exposure related to observed lung
effects.<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>https://erj.ersjournals.com/content/38/2/376

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/
[https://www.ncbi.nlm.nih.gov/corehtml/pmc/pmcgifs/pmc-logo-share.png]<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>

Libby vermiculite exposure and risk of developing asbestos-related lung and pleural diseases - PubMed Central (PMC)<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>
www.ncbi.nlm.nih.gov<http://www.ncbi.nlm.nih.gov/><http://www.ncbi.nlm.nih.gov/>
The vermiculite ore formerly mined in Libby, Montana, contains asbestiform amphibole fibers of winchite, richterite, and tremolite asbestos. Because of the public health impact of widespread occupational and nonoccupational exposure to amphiboles in Libby vermiculite, numerous related studies have ...

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Wednesday, February 13, 2019 8:56:19 AM
To: Wroble, Julie
Cc: Berry, David
Subject: Re: UMontana fact sheet

This is the one I was referring to. Scroll to pages 19-23. My understanding is that the PCMe method is "PCM equivalent" meaning that they use the TEM to analyze instead of a microscope. From what I understand it allows for better resolution of small fibers and the ability to confirm by EDS what the fibers are and whether they are asbestos. Are these the same analyses you are referring to?

Is there other actual PCM data I am missing? I haven't seen that in what's been posted (or maybe I am missing where it is)

Julie

Julia A. Baldwin
Associate Professor
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University of Montana
Missoula, MT 59812
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On Feb 13, 2019, at 9:42 AM, Wroble, Julie <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>> wrote:

I don't know that I have seen ISO 10312 data for any of the samples. What I have seen is NIOSH 7402 where samples analyzed by PCM are looked at again by TEM and mineralogy is verified. Chris and Scott may have more experience with this, but I don't think you can disregard the PCM results as that is part of the analysis.

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 9:52:32 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

Are you talking about the PCMe air samples that were measured with the ISO method (the ASUM childcare Jan.21 report)? I thought that since PCMe uses the TEM that they did EDS on the fibers in order to rule out asbestos compositions – correct me if I am wrong on that though. Also, I was able to get the diffraction and EDS data on the two amosite fibers from the wipe samples and looked those over and they were identified correctly.

I think I found the correct Libby reference on the CT scans, although the pdf I found was a pdf on a UMontana site on the topic. Not sure if there is a more official place that that resides.

Let me know if you can get approval for the acknowledgments. Curtis was ok with being on there, so I added him. I think this is a much improved document so I'd like to get it out there as soon as I can.

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

From: "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov
>>
Date: Tuesday, February 12, 2019 at 6:26 PM
To: "Baldwin, Julia"
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.
edu>>, "Berry, David"
<Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>
>
Subject: Re: UMontana fact sheet

I find Curtis' edits to be helpful. I have a few additional questions. I'm still waiting for guidance on whether our names can be on there or not...

I am also a bit concerned about how the PCM data are being discounted based on what was found in the 7402 analysis. The PCM results had detectable fibers. the 7402 analysis indicated that these were not asbestos, but OSHA doesn't let you use TEM analysis for compliance. This is not the type of data I normally work with and have shared this concern with Scott and Chris as well.

From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.
edu>>
Sent: Tuesday, February 12, 2019 2:28:10 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

Hi guys,

Curtis provided some additional suggestions that are incorporated into this version.

Julie

Julia A. Baldwin
Associate Professor

CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

From: "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov
>>
Date: Tuesday, February 12, 2019 at 10:27 AM
To: "Baldwin, Julia"
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.
edu>>, "Berry, David"
<Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>
>
Subject: Re: UMontana fact sheet

I'll call you at 930 and we can loop David in.

From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.
edu>>
Sent: Tuesday, February 12, 2019 9:21:17 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

Sounds good. I haven't heard back from Paula yet so it may just be me. You can reach me at Ex. 6 Personal Privacy (PP)

Ex. 6 Personal Privacy (PP)

Thanks,
Julie

From: "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov
>>
Date: Tuesday, February 12, 2019 at 9:55 AM
To: "Baldwin, Julia"
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.
edu>>
Cc: "Short, Paula"
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<Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>
>
Subject: Re: UMontana fact sheet

I can call one of you and loop david in.

From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 8:35:07 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

9:30 your time works for me. Paula, did you want to be in on this call? If so, how/where should we do it?

Thanks,
Julie

From: "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>>
Date: Tuesday, February 12, 2019 at 9:20 AM
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<Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

David and I have a few additional comments that we can discuss if you want later this morning. I am also going to talk with Scott Rogers about sampling recommendations shortly. I can talk at 930 my time if that works for all of you. I have a meeting at 11 am my time but should be free after that.

Julie

From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 12:00:46 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

Attached is a revised version taking into account your concerns. I would very much value your input, particularly if you have any further clarification on the unit risk weighting that I should add.

Please let me know if you have additional concerns We're trying our best to provide some clarification on the data we are dealing with.

I also thought about adding a statement on settled dust - another issue we need help with communicating is regarding the

5000 f/cm2 clean-up limit that UM has set. It keeps getting reported that this is "federally mandated". The information I have gathered on it is this:

Currently, there is no federal regulatory limit for asbestos in settled dust.
Guidelines are from Millette & Hays. 1994. Settled Asbestos Dust Sampling and Analysis.
Recommendations are based on an "experience standard"
Clean (below detection limit): below 1,000 f/cm2
Background: 10,000 f/cm2
High: 100,000 f/cm2
Our dust wipe samples have a detection limit of 920-4800<tel:920-4800> f/cm2 The University has set a clean-up limit of 5,000 f/cm2. That same limit was set for WTC dust and in Libby for clean-up.

Is all of that correct information? Anything else you would add to that?

Thanks so much for taking the time to explain some things to me. I very much appreciate your feedback.

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
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(406) 243-5778<tel:(406)%20243-5778>

On 2/11/19, 4:07 PM, "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov
>> wrote:

Julia:
I'd be happy to get on the phone with you if you like. David Berry is the Region 8 Toxicologist who worked quite a bit on the Libby site. We are both members of EPA's technical review workgroup on asbestos and have worked on guidance relating to sampling and analysis of asbestos at Superfund sites. Here's a link the the latest version which is currently being updated.
https://semspub.epa.gov/work/HQ/175329.pdf
FRAMEWORK FOR INVESTIGATING ASBESTOS-CONTAMINATED SUPERFUND SITES - OSWER 9200.0-68 - US Environmental Protection Agency<https://semspub.epa.gov/work/HQ/175329.pdf>
semspub.epa.gov<http://semspub.epa.gov/><http://semspub.epa.gov/><http://semspub.epa.gov/>
emphasized in this recommended framework. ABS can be useful for assessment of asbestos contamination of both outdoor soil and indoor dust. To allow for improved risk assessments, the analytical procedure used to analyze samples from a

Note that appendix E of this document shows how toxicity values are increased for people exposed earlier in life. This is an important consideration when communicating health risks, especially when children are possibly exposed.

Here's a link to our main asbestos page: https://www.epa.gov/asbestos

The best reference I am aware of for asbestos in settled dust is a book by Millette and Hayes.
https://www.crcpress.com/Settled-Asbestos-Dust-Sampling-and-Analysis/Hays-Millette/p/book/9780873719483 They describe an "experience standard" that is used by many in industry. Note that this reference is fairly dated. For Libby and

WTC we went with half their lower value in the interest of protection of public health in residential settings. However, we have collected a lot of data, especially at Libby with indoor dust and indoor air measurements and were unable to discover relationships between the two. In the case of asbestos, there are many factors which impact release of fibers to the air including relative humidity, level of disturbance/activity, type of soil, type of asbestos, etc. These issues have posed challenging questions and are the focus of much current EPA research on asbestos.

Because the exposure of interest for risk is the inhalation pathway, EPA relies on measurements of asbestos in air, rather than dust, soil, or bulk material to the extent practical. That being said, we often go straight to cleanup if soil levels are above certain benchmarks and we know exposures are occurring.

The one fiber question is a challenging one and I can tell you I have had to answer it at more than one public meeting. Our response is usually focused on the fact that for any carcinogen, you will want to reduce your exposure to the greatest extent practical. As you may be aware, the OSHA PEL for asbestos is considered to be a significant risk standard and meaning there is a risk of death for 3.4 out of every 1000 workers exposed at that level. This value should never be used for the general public and certainly not for children. The text on OSHA's site states that there is no safe level of exposure to any kind of asbestos. https://www.osha.gov/SLTC/asbestos/

I would be happy to talk with you further if you have any follow up questions.
Julie

Julie Wroble|Toxicologist|USEPA Region 10|1200 6th Ave., OERA-140|Seattle, WA 98101|T: 206-553-1079<tel:206-553-1079>|e-mail: wroble.julie@epa.gov<mailto:wroble.julie@epa.gov><mailto:wroble.julie@epa.gov><mailto:wroble.julie@epa.gov>

-----Original Message-----
From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
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Message

From: Baldwin, Julia [jbaldwin@mso.umt.edu]
Sent: 2/13/2019 8:21:45 PM
To: Wroble, Julie [Wroble.Julie@epa.gov]
CC: Berry, David [Berry.David@epa.gov]
Subject: Re: UMontana fact sheet

Good to know. I am always skeptical when I see a consultant as an author, but I also have seen lots of references to it and applications of it, so that' s good to know it hasn' t been validated.

Julie

Julia A. Baldwin
Associate Professor
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Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778

On Feb 13, 2019, at 1:18 PM, Wroble, Julie <Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov>> wrote:

The berman and crump approach was never formally adopted by EPA and was never validated. Unfortunately, it has been used on sites where Dr. Berman acted as a consultant. EPA does not support this approach.

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu>>
Sent: Wednesday, February 13, 2019 12:13:15 PM
To: Berry, David
Cc: Wroble, Julie
Subject: Re: UMontana fact sheet

Thanks David,

I think that all sounds reasonable. I' ll work on revising that language.

What is your opinion on the Berman and Crump work on calculating individual IURs for chrysotile vs amphibole? I' m just curious if that' s solid work or not (not that I want to go there, it' s just something I am curious about).

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The paragraph on the page containing "Will a single . . . '. Need to spell out what a CT scan is - Computing tomography [usually it is HRCT scan - high resolution computing tomography]
I'm around most of today if you have further questions

David

David L. Berry, Ph.D.
Senior Toxicologist
U.S. EPA Region 8, EPR-S
1595 Wynkoop Street
Denver, CO 80202-1129
(303) -312-6358<tel:(303)%20-312-6358>
(303) -312-7203<tel:(303)%20-312-7203> FAX

-----Original Message-----
From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
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Cc: Berry, David <Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

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Julie

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I'm mostly fine with the final version of the fact sheet except I don't think EPA can support the statement that there is scientific consensus that chrysotile fibers are more readily cleared from the body. EPA, OSHA and other regulatory agencies maintain that all forms of asbestos cause cancer and are are treated equivalently.
I will be in meetings much of today and will not be available.

Two citations for libby exposure related to observed lung effects.<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>https://erj.ersjournals.com/content/38/2/376

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/
[https://www.ncbi.nlm.nih.gov/corehtml/pmc/pmcgifs/pmc-logo-share.png]<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/<https://www.ncbi.nlm.nih.gov/corehtml/pmc/pmcgifs/pmc-logo-share.png]%3Chttps://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>>

Libby vermiculite exposure and risk of developing asbestos-related lung and pleural diseases - PubMed Central (PMC)<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551440/>
www.ncbi.nlm.nih.gov<http://www.ncbi.nlm.nih.gov/><http://www.ncbi.nlm.nih.gov/<http://www.ncbi.nlm.nih.gov<http://www.ncbi.nlm.nih.gov/><http://www.ncbi.nlm.nih.gov/>>
The vermiculite ore formerly mined in Libby, Montana, contains asbestiform amphibole fibers of winchite, richterite, and tremolite asbestos. Because of the public health impact of widespread occupational and nonoccupational exposure to amphiboles in Libby vermiculite, numerous related studies have ...

From: Baldwin, Julia <jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Wednesday, February 13, 2019 8:56:19 AM

To: Wroble, Julie
Cc: Berry, David
Subject: Re: UMontana fact sheet

This is the one I was referring to. Scroll to pages 19-23. My understanding is that the PCMe method is " PCM equivalent" meaning that they use the TEM to analyze instead of a microscope. From what I understand it allows for better resolution of small fibers and the ability to confirm by EDS what the fibers are and whether they are asbestos. Are these the same analyses you are referring to?

Is there other actual PCM data I am missing? I haven' t seen that in what' s been posted (or maybe I am missing where it is)

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

On Feb 13, 2019, at 9:42 AM, Wroble, Julie
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>> wrote:

I don't know that I have seen ISO 10312 data for any of the samples. What I have seen is NIOSH 7402 where samples analyzed by PCM are looked at again by TEM and mineralogy is verified. Chris and Scott may have more experience with this, but I don't think you can disregard the PCM results as that is part of the analysis.

From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 9:52:32 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

Are you talking about the PCMe air samples that were measured with the ISO method (the ASUM childcare Jan.21 report)? I thought that since PCMe uses the TEM that they did EDS on the fibers in order to rule out asbestos compositions - correct me if I am wrong on that though. Also, I was able to get the diffraction and EDS data on the two amosite fibers from the wipe samples and looked those over and they were identified correctly.

I think I found the correct Libby reference on the CT scans, although the pdf I found was a pdf on a UMontana site on the topic. Not sure if there is a more official place that that resides.

Let me know if you can get approval for the acknowledgments. Curtis was ok with being on there, so I added him. I think this is a much improved document so I' d like to get it out there as soon as I can.

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

From: "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>>
Date: Tuesday, February 12, 2019 at 6:26 PM
To: "Baldwin, Julia"
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>, "Berry, David"

<Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><
mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

I find Curtis' edits to be helpful. I have a few additional questions. I'm still waiting for guidance on whether our names can be on there or not...

I am also a bit concerned about how the PCM data are being discounted based on what was found in the 7402 analysis. The PCM results had detectable fibers. the 7402 analysis indicated that these were not asbestos, but OSHA doesn't let you use TEM analysis for compliance. This is not the type of data I normally work with and have shared this concern with Scott and Chris as well.

_____
From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.e
du><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 2:28:10 PM
To: Wroble, Julie; Berry, David
Subject: Re: UMontana fact sheet

Hi guys,

Curtis provided some additional suggestions that are incorporated into this version.

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

From: "Wroble, Julie"
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ov><mailto:Wroble.Julie@epa.gov>>
Date: Tuesday, February 12, 2019 at 10:27 AM
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mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

I'll call you at 930 and we can loop David in.

_____
From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.e
du><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 9:21:17 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

Sounds good. I haven't heard back from Paula yet so it may just be me. You can reach me at Ex. 6 Personal Privacy (PP)

Ex. 6 Personal Privacy (PP)

Thanks,
Julie

From: "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.g
ov><mailto:Wroble.Julie@epa.gov>>
Date: Tuesday, February 12, 2019 at 9:55 AM
To: "Baldwin, Julia"
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.e
du><mailto:jbaldwin@mso.umt.edu>>

Cc: "Short, Paula"
<paula.short@mso.umt.edu<mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu>>, "Berry, David"
<Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

I can call one of you and loop david in.

_____

From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 8:35:07 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

9:30 your time works for me. Paula, did you want to be in on this call? If so, how/where should we do it?

Thanks,
Julie

From: "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>>
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Cc: "Short, Paula"
<paula.short@mso.umt.edu<mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu>>, "Berry, David"
<Berry.David@epa.gov<mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov><mailto:Berry.David@epa.gov>>
Subject: Re: UMontana fact sheet

David and I have a few additional comments that we can discuss if you want later this morning. I am also going to talk with Scott Rogers about sampling recommendations shortly. I can talk at 930 my time if that works for all of you. I have a meeting at 11 am my time but should be free after that.

Julie

_____

From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>
Sent: Tuesday, February 12, 2019 12:00:46 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

Hi Julie,

Attached is a revised version taking into account your concerns. I would very much value your input, particularly if you have any further clarification on the unit risk weighting that I should add.

Please let me know if you have additional concerns We're trying our best to provide some clarification on the data we are dealing with.

I also thought about adding a statement on settled dust - another issue we need help with communicating is regarding the 5000 f/cm2 clean-up limit that UM has set. It keeps getting reported that this is "federally mandated". The information I have gathered on it is this:

Currently, there is no federal regulatory limit for asbestos in settled dust.
Guidelines are from Millette & Hays. 1994. Settled Asbestos Dust Sampling and Analysis.
Recommendations are based on an "experience standard"
Clean (below detection limit): below 1,000 f/cm2
Background: 10,000 f/cm2
High: 100,000 f/cm2
Our dust wipe samples have a detection limit of 920-4800<tel:920-4800> f/cm2 The University has set a clean-up limit of 5,000 f/cm2. That same limit was set for WTC dust and in Libby for clean-up.

Is all of that correct information? Anything else you would add to that?

Thanks so much for taking the time to explain some things to me. I very much appreciate your feedback.

Julie

Julia A. Baldwin
Associate Professor
CHCB 307
Department of Geosciences
University of Montana
Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

On 2/11/19, 4:07 PM, "Wroble, Julie"
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>> wrote:

Julia:
I'd be happy to get on the phone with you if you like. David Berry is the Region 8 Toxicologist who worked quite a bit on the Libby site. We are both members of EPA's technical review workgroup on asbestos and have worked on guidance relating to sampling and analysis of asbestos at Superfund sites. Here's a link the the latest version which is currently being updated.
https://semspub.epa.gov/work/HQ/175329.pdf
FRAMEWORK FOR INVESTIGATING ASBESTOS-CONTAMINATED SUPERFUND SITES - OSWER 9200.0-68 - US Environmental Protection Agency<https://semspub.epa.gov/work/HQ/175329.pdf>
semspub.epa.gov<http://semspub.epa.gov/><http://semspub.epa.gov/><http://semspub.epa.gov/><http://semspub.epa.gov/<http://semspub.epa.gov/%3E%3Chttp://semspub.epa.gov/%3E%3Chttp://semspub.epa.gov/>>
emphasized in this recommended framework. ABS can be useful for assessment of asbestos contamination of both outdoor soil and indoor dust. To allow for improved risk assessments, the analytical procedure used to analyze samples from a

Note that appendix E of this document shows how toxicity values are increased for people exposed earlier in life. This is an important consideration when communicating health risks, especially when children are possibly exposed.

Here's a link to our main asbestos page: https://www.epa.gov/asbestos

The best reference I am aware of for asbestos in settled dust is a book by Millette and Hayes. https://www.crcpress.com/Settled-Asbestos-Dust-Sampling-and-Analysis/Hays-Millette/p/book/9780873719483 They describe an "experience standard" that is used by many in industry. Note that this reference is fairly dated. For Libby and WTC we went with half their lower value in the interest of protection of public health in residential settings. However, we have collected a lot of data, especially at Libby with indoor dust and indoor air measurements and were unable to discover relationships between the two. In the case of asbestos, there are many factors which impact release of fibers to the air including relative humidity, level of disturbance/activity, type of soil, type of asbestos, etc. These issues have posed challenging questions and are the focus of much current EPA research on asbestos.

Because the exposure of interest for risk is the inhalation pathway, EPA relies on measurements of asbestos in air, rather than dust, soil, or bulk material to the extent practical. That being said, we often go straight to cleanup if soil levels are above certain benchmarks and we know exposures are occurring.

The one fiber question is a challenging one and I can tell you I have had to answer it at more than one public meeting. Our response is usually focused on the fact that for any carcinogen, you will want to reduce your exposure to the greatest extent practical. As you may be aware, the OSHA PEL for asbestos is considered to be a significant risk standard and meaning there is a risk of death for 3.4 out of every 1000 workers exposed at that level. This value should never be used for the general public and certainly not for children. The text on OSHA's site states that there is no safe level of exposure to any kind of asbestos. https://www.osha.gov/SLTC/asbestos/

I would be happy to talk with you further if you have any follow up questions.
Julie

Julie Wroble|Toxicologist|USEPA Region 10|1200 6th Ave., OERA-140|Seattle, WA 98101|T: 206-553-1079<tel:206-553-1079>|e-mail:
wroble.julie@epa.gov<mailto:wroble.julie@epa.gov><mailto:wroble.julie@epa.gov><mailto:wroble.julie@epa.gov><mailto:wroble.julie@epa.gov>

-----Original Message-----
From: Baldwin, Julia
<jbaldwin@mso.umt.edu<mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu><mailto:jbaldwin@mso.umt.edu>>

Sent: Monday, February 11, 2019 2:35 PM
To: Wroble, Julie
<Wroble.Julie@epa.gov<mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov><mailto:Wroble.Julie@epa.gov>>
Cc: Short, Paula
<paula.short@mso.umt.edu<mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu><mailto:paula.short@mso.umt.edu>>
Subject: UMontana fact sheet

Hi Julie,

Paula forwarded me your concerns with the document that I put together for the website. I am a geologist who knows quite a bit about the mineralogy and geology of the asbestos minerals, as well as mineralogy-based studies of biodurability, and was asked to put this together by our communications team because questions were being asked that they couldn' t answer. I definitely don' t want any factually incorrect information in the document so I welcome your critique and will be revising the document to reflect your input. However, I also want to try to communicate the most recent science-based results to help folks gain a perspective on the risk. In hindsight, my attempt to relate surface load numbers to airborne concentrations was sketchy, but we have been getting so many questions about that more than anything else. It has been the main point of concern and one that nobody has been able to answer for us. Any guidance or references you can provide specifically on how to interpret the concentration in dust wipe samples that can help in communicating that aspect to the public would be very helpful.

I' ve requested the diffraction and EDS data on the two amosite fibers to confirm the composition of those fibers and can certainly add that information once I look at it.

The how harmful is one fiber is there because it is a question that has actually been asked. My point was to get across the idea that asbestos is present at background levels and we are exposed to it daily. There seems to be a general public perception that we only breathe asbestos fibers when we are exposed to it as a contaminant and I was trying to put that into perspective. Perhaps it would be best to discuss it in different terms, but I was trying to come up with an analogy that people could relate to and f-yr/mL is a tough concept to explain to the general public.

I' d be happy to chat about it over the phone if that is easier.

Sincerely,
Julie Baldwin

Julia A. Baldwin
Associate Professor
CHCB 307
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Missoula, MT 59812
(406) 243-5778<tel:(406)%20243-5778>

Message

From: Baldwin, Julia [jbaldwin@mso.umt.edu]
Sent: 2/12/2019 8:27:01 PM
To: Wroble, Julie [Wroble.Julie@epa.gov]
Subject: Re: UMontana fact sheet
Attachments: Asbestos Fact Sheet McGill v3.docx

Hi Julie,

David alerted me that I spelled your name wrong on my acknowledgments. I am sorry for that - lack of sleep to blame!

Here is the document with your name spelled correctly!

Julie

From: "Wroble, Julie" <Wroble.Julie@epa.gov>
Date: Tuesday, February 12, 2019 at 10:27 AM
To: "Baldwin, Julia" <jbaldwin@mso.umt.edu>, "Berry, David" <Berry.David@epa.gov>
Subject: Re: UMontana fact sheet

I'll call you at 930 and we can loop David in.

From: Baldwin, Julia <jbaldwin@mso.umt.edu>
Sent: Tuesday, February 12, 2019 9:21:17 AM
To: Wroble, Julie
Cc: Short, Paula; Berry, David
Subject: Re: UMontana fact sheet

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Julie

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Date: Tuesday, February 12, 2019 at 9:55 AM
To: "Baldwin, Julia" <jbaldwin@mso.umt.edu>
Cc: "Short, Paula" <paula.short@mso.umt.edu>, "Berry, David" <Berry.David@epa.gov>
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To: "Baldwin, Julia" <jbaldwin@mso.umt.edu>
Cc: "Short, Paula" <paula.short@mso.umt.edu>, "Berry, David" <Berry.David@epa.gov>
Subject: Re: UMontana fact sheet

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Julie

From: Baldwin, Julia <jbaldwin@mso.umt.edu>
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Cc: Short, Paula; Berry, David
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Please let me know if you have additional concerns We're trying our best to provide some clarification on the data we are dealing with.

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Guidelines are from Millette & Hays. 1994. Settled Asbestos Dust Sampling and Analysis.
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Clean (below detection limit): below 1,000 f/cm2
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Our dust wipe samples have a detection limit of 920-4800 f/cm2
The University has set a clean-up limit of 5,000 f/cm2. That same limit was set for WTC dust and in Libby for clean-up.

Is all of that correct information? Anything else you would add to that?

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Julie

Julia A. Baldwin
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On 2/11/19, 4:07 PM, "Wroble, Julie" <Wroble.Julie@epa.gov> wrote:

Julia:
I'd be happy to get on the phone with you if you like. David Berry is the Region 8 Toxicologist who worked quite a bit on the Libby site. We are both members of EPA's technical review workgroup on asbestos and have worked on guidance relating to sampling and analysis of asbestos at Superfund sites. Here's a link the the latest version which is currently being updated.
https://semspub.epa.gov/work/HQ/175329.pdf
Note that appendix E of this document shows how toxicity values are increased for people exposed earlier in life. This is an important consideration when communicating health risks, especially when children are possibly exposed.

Here's a link to our main asbestos page: https://www.epa.gov/asbestos

The best reference I am aware of for asbestos in settled dust is a book by Millette and Hayes. https://www.crcpress.com/Settled-Asbestos-Dust-Sampling-and-Analysis/Hays-Millette/p/book/9780873719483 They describe an "experience standard" that is used by many in industry. Note that this reference is fairly dated. For Libby and WTC we went with half their lower value in the interest of protection of public health in residential settings. However, we have collected a lot of data, especially at Libby with indoor dust and indoor air measurements and were unable to discover relationships between the two. In the case of asbestos, there are many factors which impact release of fibers to the air including relative humidity, level of disturbance/activity, type of soil, type of asbestos, etc. These issues have posed challenging questions and are the focus of much current EPA research on asbestos.

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Julie

Julie Wroble|Toxicologist|USEPA Region 10|1200 6th Ave., OERA-140|Seattle, WA 98101|T: 206-553-1079|e-mail: wroble.julie@epa.gov

-----Original Message-----
From: Baldwin, Julia <jbaldwin@mso.umt.edu>
Sent: Monday, February 11, 2019 2:35 PM
To: Wroble, Julie <Wroble.Julie@epa.gov>
Cc: Short, Paula <paula.short@mso.umt.edu>
Subject: UMontana fact sheet

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I' d be happy to chat about it over the phone if that is easier.

Sincerely,
Julie Baldwin

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Department of Geosciences
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Missoula, MT 59812
(406) 243-5778